

EULYCHNIA CASTANEA PHIL. (CACTACEAE): GEOGRAPHICAL
DISTRIBUTION AND VARIATION

EULYCHNIA CASTANEA PHIL. (CACTACEAE): *DISTRIBUCION GEO-
GRAFICA Y VARIACION*

Urs Eggli¹ & Beat Ernst Leuenberger²

ABSTRACT

The geographical range of *Eulychnia castanea* (Cactaceae) has been investigated in the field and was found to be a rather restricted area along a small fraction of the central Chilean coast. Populations are scattered and sometimes reduced in number of individuals. The conservation status is interpreted as being out of danger, since a large and viable population occurs within Fray Jorge National Park. A case of suspected introgression from *Eulychnia acida* is also reported.

KEYWORDS: *Eulychnia*, conservation, Cactaceae.

INTRODUCTION

The genus *Eulychnia* is a small genus of shrubby to arborescent columnar cacti, and 4 of the presumably 5 species are restricted to Chile (the exception being *E. Ritteri* from southern Peru). The two species *Eulychnia acida* and *E. iquiquensis* form a conspicuous element in the vegetation of the semi-arid and arid Norte Chico. The history and typification of *Eulychnia taxa*, as well as some preliminary notes on possible synonymies, have been the subject of a recent contribution (Leuenberger & Eggli, 1998).

Eulychnia castanea was described by R. A. Philippi in 1864, based on a collection by Landbeck from the coast near Los Molles (then in Aconcagua Province, today in Petorca Province). It was named for the diagnostic pungent thin spi-

RESUMEN

Se estudia la distribución geográfica de *Eulychnia castanea* (Cactaceae). Los resultados señalan que su distribución está restringida a un área limitada de la costa central de Chile. Las poblaciones son más o menos aisladas y frecuentemente poseen un número reducido de plantas. El estado de conservación se interpreta como "fuera de peligro" a base de una población extendida y viable dentro del Parque Nacional Fray Jorge. Se menciona un caso de posible introgresión de *Eulychnia acida*.

PALABRAS CLAVES: *Eulychnia*, conservación, Cactaceae.

nes produced from the areoles of the pericarpel, and the spiny fruits were compared with the fruits of the chestnut by Philippi (Lat. *castaneus* = chestnut). Although Philippi did not publish an illustration of *E. castanea*, and despite some problems associated with the type material, the identity of the taxon does not present any problems, and its typification was recently resolved (Leuenberger & Eggli, 1998).

GEOGRAPHICAL DISTRIBUTION: The type locality of *Eulychnia castanea* is at Los Molles (32°14'S, Región de Valparaíso, Prov. Petorca), where the taxon can still be observed today on the coastal rocks below the houses. The northern limit of the range of this strictly coastal taxon is given as "Talinay" in the literature (Ritter, 1980; Hoffmann, 1989), and this is taken to represent the region of the Quebrada Talinay and Cerro Talinay (c. 30°51'S, Región de Coquimbo, Prov. Limarí) (the "Altos de Talinay" further N cannot qualify since *E. castanea* has a strictly coastal distribution).

Our collecting activities in connection with a study of the *Cactaceae* for the "Proyecto Flora de Chile" have now considerably extended the

¹Städtische Sukkulente-Sammlung Zürich, Mythenquai 88, CH-8002 Zürich, Switzerland.

²Botanischer Garten und Botanisches Museum Berlin-Dahlem, Königin-Luise-Strasse 6-8, D-14191 Berlin, Germany.

known geographical range for *E. castanea* towards the North, just into Prov. Elqui. Together with several additional collections, we have established a more or less continuous distribution of *E. castanea* along the coast between Los Molles in the South and near Puerto Aldea on the Lengua de Vaca peninsula W of the Bahía Tongoy (30°18.51'S) in the North (Map 1).

Whether this represents the true geographical range of the taxon remains open to debate, and subsequent searches may well reveal additional localities. Our own observations indicate that *E. castanea* does neither occur to the north of the known range at Punta Teatinos N of La Serena, nor at Quintero to the south of the known range.

All our observations as well as remarks on the labels of the few available herbarium specimens indicate that *E. castanea* is a strictly coastal taxon, occupying but a narrow fringe along the coast. Its ecological amplitude appears to be considerable, and apparently well-established plants can be observed on coastal rocks, among coastal pebbles (e.g. near Pichidangui) or in coastal semi-stabilized dune sands (e.g. just N of Puente El Teniente). In only one place (near Huentelauquen) could we observe *E. castanea* planted as component of a "living fence" primarily made up by one of the numerous forms *Echinopsis chiloensis*.

CONSERVATION: Since the coast strip northwards from Papudo and Zapallar is of easy access from Santiago, the area is currently heavily "developed" for weekend and summer tourism. Considerable areas between the Panamerican Highway and the coast are already fenced off and divided into lots for sale and house construction. The remaining area suffers from grazing impact and there are also scattered plantations of *Eucalyptus* and/or *Pinus*. As a consequence, the already narrow distribution of *Eulychnia castanea* appears to be under severe pressure from these developments. Its conservation status needs to be assessed, although Benoit (1989) classified it as out of danger without giving further details. Hoffmann (1989) does not comment on the conservation status of this species.

While the number of populations of *E. castanea* remains unknown, the distribution map implies a more or less continuous occurrence along the coast. Despite the threats posed by the increasing urbanization of the area and increasing grazing pressure, the species may have a good chance to survive, as we have observed the plant growing

in moderately disturbed areas, e.g. at Los Molles, Pichidangui, in the Quebrada del Teniente, and also growing in hedges at Huentelauquen. Moreover, a very vigorous population consisting of a large number of individuals is located within Fray Jorge National Park, and *E. castanea* therefore enjoys a fair amount of protection. Its conservation status as "out of danger" seems to be a sound interpretation, and its survival does not seem to be immediately threatened as a whole. Populations in the southern part of the natural range are, however, under some pressure as outlined above, and it would be a good idea to suggest to landowners and communities to protect the natural populations as a local biodiversity treasure, and even to propagate the plant at appropriate sites, e.g. in hedgerows. A study of the biology of this species by a local biologist would seem very promising for a more detailed assessment of its conservation status.

HYBRIDIZATION INVOLVING *EULYCHNIA CASTANEA*:

At the N-most limit, R. Kraus (pers. comm.) observed typical *Eulychnia castanea* as well as plants which appear intermediate between *E. castanea* and one of the larger growing species of the genus, judging from the woolly-bristly indumentum of the pericarpel and the larger stature of the plants (R. Kraus photos nos. 1988 and 1989, ZSS). Similar plants were also collected back in 1947 by B. Sparre (Sparre 1974). While *E. castanea* cannot be distinguished vegetatively from either *E. acida* or *E. breviflora* (the only other species of the genus likely to be present in the area), the pericarpel spination is denser and more bristly instead of pungent, as would be typical for *E. castanea* (Figs. 1, 2).

According to our observations, the range of *E. breviflora* does not extend significantly to the south of Coquimbo, while *E. acida* was found with a few individuals growing in the immediate vicinity of *E. castanea* on the coastal terrace in Fray Jorge National Park (near 30° 37.94' S / 71° 42.45' W). In the absence of better evidence, we interpret the occurrence of the densely bristly flowers in *E. castanea* as introgression from *E. acida*, whose flowers are characterised by a short softly woolly tomentum (Figs. 1, 2).

MATERIAL EXAMINED: CHILE: IV Región: Prov. Elqui: 2 km E of Puerto Aldea, 20 - 50 m, 31-X-1997, EGGLI & LEUENBERGER 3083 (B, CONC, SGO, ZSS); Prov. Limarí: Parque Nacional Fray Jorge, coastal plain, 20-100 m, 1-XI-1997,

EGGLI & LEUENBERGER 3086d (B, ZSS: photos only); Fray Jorge, boca del Río Limarí, 11-X-1947, SPARRE 2974 (SGO); first hill N of the mouth of the Quebrada San Pedro, 80 - 140 m, 18-X-1997, EGGLE & LEUENBERGER 2945 (B, CONC, SGO, ZSS); Prov. Choapa: Caleta Oscuro 3 km W of Puerto Oscuro (Panamericana), 20 - 100 m, 2-XI-1997, EGGLE & LEUENBERGER 3088 (B, CONC, SGO, ZSS); Fundo Corral de Julio, km 315 de la Carretera, 1 - 2 km desde el mar, 6-XI-1976, Muñoz 921 (SGO); 7.3 km on Panamericana N of turnoff from Panamericana to Los Vilos, on top of coastal rocks, 40 m, 10-XI-1991, EGGLE & LEUENBERGER 1669 (B, SGO, ZSS); Los Vilos, s.a., Ritter 241 loc. 1 (SGO, ZSS); Pichidangui, extreme tip of peninsula, coastal rocks, 10 - 50 m, 17-X-1997, EGGLE & LEUENBERGER 2933 (CONC, B, SGO, ZSS); Pichidangui, s.a., Ritter 241 loc. (SGO); V Región: Prov. Petorca: c. 1 - 1.5 km S of Los Molles, N side of Puente El Chivato, 20 m, 10-XI-1991, EGGLE & LEUENBERGER 16561 (B, SGO, ZSS); Los Molles, coastal rocks below houses, 10 - 80 m, 17-X-1997, EGGLE & LEUENBERGER 2932a (B, ZSS: photos only).

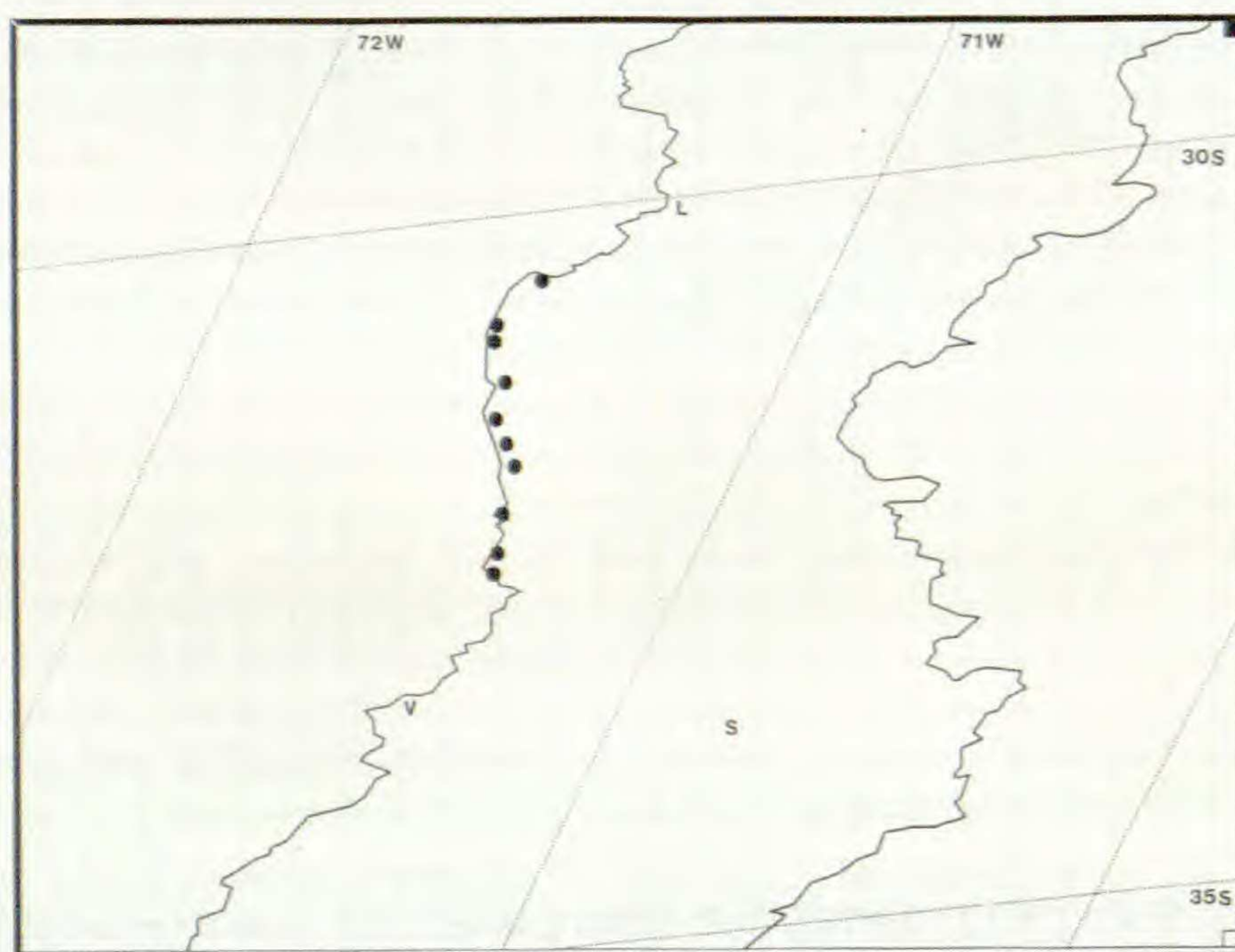
ACKNOWLEDGMENTS

We are grateful to the authorities at the Botany Institute of the Universidad de Concepcion for provi-

ding infrastructure and a vehicle for our studies. The Swiss National Science Foundation (project no. 31-39176.93 "Study of Cactaceae for the Flora of Chile project") as well as the Swiss Academy of Natural Sciences are gratefully acknowledged for financial support to the first author for field work in Chile. Likewise, the second author is grateful to the Research Committee of the Cactus and Succulent Society of America, Inc., for a grant towards travel costs in connection with the above project. B and ZSS have kindly provided support and infrastructure, and we are further grateful to the curators at SGO and CONC to allow us free access to their collections.

REFERENCES

- BENOIT, I. L. (ED.) 1989. Red Book of Chilean terrestrial flora (Part One). Santiago. (vi), 151 pp., 22 lám. incl. en el texto, 1 mapa.
- HOFFMANN, A. E. 1989. Cactáceas en la flora silvestre de Chile. Santiago. 272, i pp. (Cactaceae).
- JACQUEZ, G. M. 1995. Geodat, a geographic database, Version 2.0. Ann Arbor (US: MI): BioMedware.
- LEUENBERGER, B. E. & EGGLE, U. 1998. The genus *Eulychnia* (Cactaceae) in Chile: Notes on the taxonomy, types, and other old specimens. *Haseltonia* 5 (submitted).
- PHILIPPI, R.A. 1864. *Plantarum novarum chilensium. Centuriae inclusis quibusdam Mendocinis et Patonicis*. *Tinnaea* 33: 1-308.
- RITTER, F. 1980. Kakteen in Sudamerika. Band 3. Chile. Spangenberg. Pp. 857-1238. (Cactaceae).



MAP 1. Known geographical range of *Eulychnia castanea*. Base map drawn with Geodat V2.0 (Jacquez, 1995), using a Lambert Azimuthal Projection. L = La Serena, S = Santiago, V = Valparaiso.



FIG. 1. Advanced buds and flowers of typical *Eulychnia castanea* (Eggl & Leuenberger 2945, N of mouth of Quebrada San Pedro)

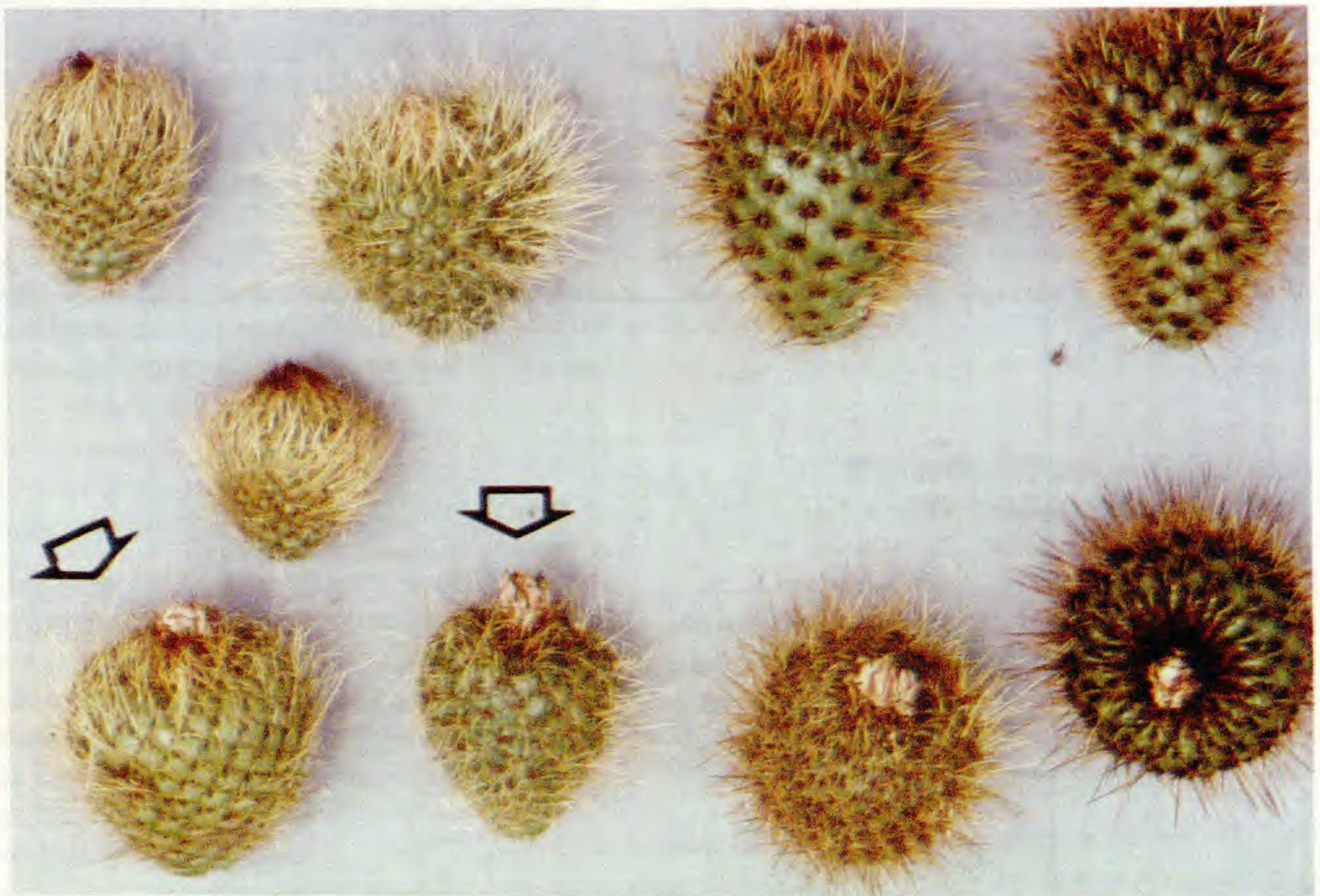


FIG. 2. Recently spent flowers and young fruits of *Eulychnia castanea* showing (arrow) introgression from *E. acida* (EGGLI & LEUENBERGER 3086d [photos only], coastal terrace of Fray Jorge National Park).

Fecha de publicación: 07 de mayo de 1999